

$$A = 4\pi r^2$$

$$V = \frac{4}{3}\pi r^3$$

$$h = 8.625 \text{ in}$$

$$r = 1.43 \text{ in}$$

$$V = Bh$$

$$\pi 1.43^2 \cdot 8.625$$

$$= 55.4 \text{ in}^3$$

$$-25.95$$

$$\underline{29.45 \text{ in}^3}$$

a. $C = 8 \text{ in}$

$$\pi d = 8$$

$$d = 2.54$$

$$r = 1.27$$

$$V = \frac{4}{3}\pi 1.27^3$$

$$V = 8.65 \text{ in}^3$$

$$\times 3$$

$$\underline{25.95}$$

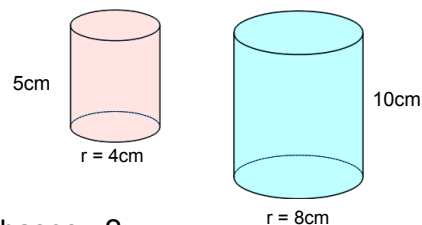
12.7 Explore Similar Solids

Similar solids--same shape, but not necessarily the same size

All spheres are similar.

For other solids:

Bases must be similar and other corresponding lengths must be proportional.



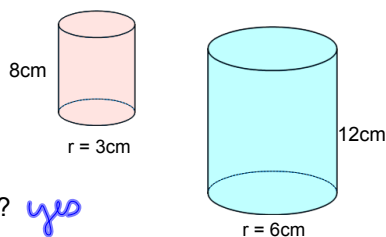
ex 1:

Are the bases ~? *yes*

Scale factor? *1:2*

Are other lengths proportional?

1:2



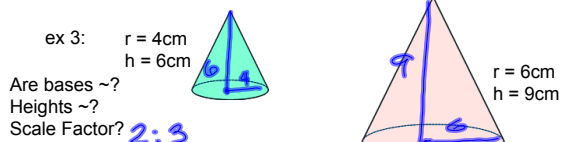
ex 2:

Are the bases ~? *yes*

Scale factor? *1:2*

Are other lengths proportional?

2:3 *NO*



ex 3:

$r = 4 \text{ cm}$
 $h = 6 \text{ cm}$

Are bases ~?

Heights ~?

Scale Factor? *2:3*

Find the following for each figure and compare the ratios to scale factor.

	small	large	
l	$2\sqrt{13}$	$3\sqrt{13}$	<i>2:3</i>
C	8π	12π	<i>2:3</i>
B	16π	36π	<i>4:9</i>
$LA = \frac{1}{2}Bl$	$8\pi\sqrt{13}$	$18\pi\sqrt{13}$	<i>4:9</i>
SA			
$V = \frac{1}{3}Bl$	32π	108π	<i>8:27</i>

Theorem 12.13--If the scale factor of 2 ~ solids is a:b, then:

1. The ratio of corresponding areas is a 2 :b 2
2. The ratio of corresponding volumes is a 3 :b 3

Ex:

The scale factor of 2 cones is 5:6.
What is the ratio of:

P 5:6

LA 25:36

SA 25:36

V 125:216

l 5:6

r 5:6

If the LA of smaller is 100π ,
what is LA for the larger?

$$\frac{25}{36} = \frac{100\pi}{LA} \quad LA = 144\pi \text{ u}^2$$

If the V of smaller is 86.4π ,
what is V for the larger?

$$\frac{125}{216} = \frac{86.4\pi}{V} \quad V = 149.3\pi \text{ u}^3$$

Ex:

Two solid metal cylinders are similar.

radius of 1st = 10cm

radius of 2nd = 14cm

What is the scale factor?

$$\frac{5}{7}$$

If the smaller cylinder weighs 2.5 kg,
how much does the larger one weigh?

$$\frac{125}{343} = \frac{2.5}{W} \quad \text{Volume}$$

(6.86 kg)

Ex:

Two similar pyramids have LA = 12cm^2 and LA = 27cm^2 .

What is the scale factor?

$$\frac{2}{3}$$

If the volume of the smaller is $V = 20\text{cm}^3$,
what is the volume for the larger?

$$\frac{8}{27} = \frac{20}{V} \quad V = 67.5\text{cm}^3$$

$$\frac{12}{27} = \frac{4}{9}$$

Ex:

Two similar prisms have LA = 27cm^2 and LA = 75cm^2 .

What is the scale factor?

$$3:5$$

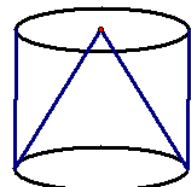
If the volume of the smaller is $V = 121.5\text{cm}^3$, what is the volume for the larger?

$$\frac{27}{125} = \frac{121.5}{V} \quad 562.5\text{cm}^3$$

Is this cylinder ~ to the cone?

Cylinder Volume = $36\pi \text{ u}^3$
Cone Volume = ?

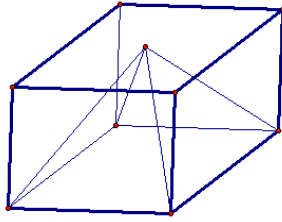
$$12\pi \text{ u}^3$$



$$\begin{aligned} \text{Cyl } V &= Bh \\ \text{Cone } V &= \frac{1}{3}Bh \end{aligned}$$

Pyramid Volume = 9 u^3
Prism Volume = ?

27 u^3



HW

p850-851

3-6, 8, 9, 11-15, 19